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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/780,501	02/17/2004	James Thomas DellaMorte SR.	104195-0014	7867

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EXAMINER	
SINGH, RAMNANDAN P	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)	
Office Action Summary	10/780,501	DELLAMORTE ET AL.	
	Examiner	**Art Unit**	
	Ramnandan Singh	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *Feb. 17, 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 June 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *Jul. 13, 2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings filed on Jun 18, 2004 are objected to because Figures 4A, 4B, 5 and 7 do not show legends explaining the reference numerals used in the figures. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required

corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Claim 1 recites the steps of: (A) through (F). These steps have not been shown using a flowchart. A similar thing holds for claim 5 comprising steps: (C) and (D). Therefore, these features must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining

figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. **Preliminary Amendment**

The preliminary amendment filed on Jul. 13, 2004 is approved.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1 and 5 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the

inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 1 recites the limitation "populate a matrix with these aggregate energy values" in line 8. The disclosure does not teach this matrix in such a way as to reasonably convey to one skilled in the relevant art.

A similar thing holds for claim 5.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 5 recites "an **apparatus** for performing echo suppression techniques" in line 1 and **a method** "to perform the following (steps): (i) through (iii) and (D)" in lines 9-17. It is unclear whether Applicants are claiming an apparatus or a method.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 1, 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caceres et al [US 6,167,133] in view of LeBlanc [US 20020101830 A1].

Regarding claim 1, Caceres et al teach a method of performing echo suppression in a telecommunications system, including the steps of:

(A) calculating the energy represented in each sample of both the voice information received from a user's telephone equipment, and transmitted from to the telephone equipment [Fig. 6A; col. 2, lines 13-51; col. 5, line 50 to col. 6, line 20];

(B) aggregating the energy data for samples over a 10-msec period to form a frame of an aggregate energy value [Figs. 8a-8b, 16A; col. 7, line 18 to col. 9, line 9];

(C) populating a matrix with these aggregate energy values (i.e. using these aggregate values); (D) solving the normal equations for the matrix (i.e. generating a histogram using echo control algorithms) [Figs. 9-15; col. 11, line 51 to col. 64; col. 3, line 56 to col. 4, line 7; col. 17, lines 1-6];

(E) examining the results to determine a peak aggregate result which will indicate the time delay of the echo path [Figs. 10-13, 27E; col. 15, line 45 to col. 16, line 47]; and

(F) evaluating incoming samples on a periodic basis against the corresponding output energy result obtained at the determined time delay [27B; col. 15, line 63 to col. 16, line 7; col. 10, lines 22-58], and if the input speech energy is determined to be less than a historical output energy scaled by the determined gain, then the signal is classified as echo (i.e. detecting echo) and is suppressed from the input speech signal (i.e. echo suppression) [Figs. 10-15; col. 6, lines 21-35; col. 9, lines 41-64; col. 12, line 47 to col. 13, line 5; Figs. 1-5; col. 2, line 52 to col. 3, line 24].

Caceres et al do not teach expressly specifying the type of samples of receive and transmit signals used in Fig. 6A for an echo canceller system. As no details are shown in Fig. 6A, so one of ordinary skill in the art would have been motivated to seek any known circuit suitable to provide specific types of

receive and transmit signals used in the echo canceller system, such as the circuit of LeBlanc, as shown in Fig. 6, using PCM in and PCM out.

LeBlanc teaches an echo canceller which includes a gain control and receive and transmit signals having PCM in and PCM out [Figs. 6, 6A; Para: 0025; 0057-0062].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of LeBlac with Caceres et al in order to enable one to make/use the invention of Caceres et al using the PCM in and PCM out signals as samples of receive and transmit signals and gain control.

Further, since Carceres et al teach using different frame sizes of data including 10 msec for processing [Figs. 8a-8b; col. 7, lines 4-61, it would have been obvious to one of ordinary skill in the art to select any frame size including a 5-msec of data to generate histograms to detect echoes using peaks subject to circuit, system and design constraints.

Claim 5 is essentially similar to claim 1 and is rejected for the reasons stated above.

Regarding claim 3, Caceres et al further teach the method for determining the time delay by measuring the time elapsed between the beginning of measurements and the reaching of the peak aggregate result [Figs. 10-11, 27A-27E; col. 15, line45 to col. 16, line 20].

Regarding claim 4, Leblanc further teaches the method including the further step of employing a voice activity detector (VAD 80, VAD98) to verify that voice information is on the line and if so, then performing steps A through F and suppressing any echo that is determined to exist [Fig. 6; Para: 0082-0088].

Claim 6 is essentially similar to claim 4 and is rejected for the reasons stated above.

10. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Caceres et al and LeBlanc as applied to claim 1 above, and further in view of Graumann et al [US 20020165718 A1].

Regarding claim 2, although Caceres et al teach smoothing the results (i.e. histograms) using an exponential averaging technique [Figs. 13, 9], they do not teach expressly using a moving average technique to smooth the results.

Graumann et al teach using a moving average technique to smooth results (i.e. histograms) [Fig. 4; Para: 0010; 0019; 0021; 0034; -0037; 0062].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Graumann et al with LeBlac and Caceres et al in order to smooth the results of the computation (i.e. histograms) using a moving average technique instead of an exponential smoothing technique as an alternative means for smoothing.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(i) La Marche et al [US 3,673,355 A] disclose a digital echo canceller [Figs. 1-8; Abstract]; and

(ii) McLaughlin et al [US 6,269,161 B1] disclose an echo canceller for a full duplex speaker phone [Figs. 2-5; Abstract].

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramnandan Singh whose telephone number is (571) 272-7529. The examiner can normally be reached on M-TH (8:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang can be reached on (571) 272-7547. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ramnandan Singh
Examiner
Art Unit 2614